***South Sudan***

***Lakes States –Rumbek***

***Mott McDonald (Water for Lakes project)***

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***Assignment 2***

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1. Consider a disease known as diabetes mellitus, which is characterized by an increase in the blood sugar level. Infectious agents may contribute to the development of the disease in early childhood, but are not the main cause of the disease. Can it be classified as communicable? Explain your reasons

Answer

Diabetes is called a non-communicable disease–that is, one that cannot be spread from one person to another, Diabetes mellitus is a group of metabolic diseases characterized by hyperglycemia resulting from defects in insulin secretion, insulin action, or both. The chronic hyperglycemia of diabetes is associated with long-term damage, dysfunction, and failure of various organs, especially the eyes, kidneys, nerves, heart, and blood vessels.

Reasons:

* The main cause of the disease is not an infectious agent
* It cannot be transmitted from a person with diabetes mellitus to another person

1. How would you classify pulmonary tuberculosis using the epidemiologic method? What is the main importance of such classification?

Answer

It is classified as airborne disease and it’s a communicable disease because it is caused by an infectious agent and it develops as result of transmission of infectious agents

**Airborne transmission**: The infectious agent may be transmitted in dried secretions from the respiratory tract, which can remain suspended in the air for some time. For example, the infectious agent causing tuberculosis can enter a new host through airborne transmission.

So it is important that people with TB, who are not on effective treatment, do not release TB bacteria into the air when they cough.

Cough etiquette means that if you have TB, or you might have TB, then when you cough you should cover your mouth and nose with a tissue. You should put your used tissue in a bin. If you don't have a tissue then you should cough or sneeze into your upper sleeve or elbow. You should not cough into your hands. After you have coughed you should wash your hands.

The BCG vaccine has been shown to provide children with excellent protection against the disseminated forms of TB. However protection against pulmonary TB in adults is variable. Since most transmission originates from adult cases of pulmonary TB, the [BCG vaccine](https://www.tbfacts.org/bcg-vaccine/) is generally used to protect children, rather than to interrupt transmission among adults.

TB education is necessary for people with TB. People with TB need to know how to take their [TB drugs](https://www.tbfacts.org/tb-drugs/) properly. They also need to know how to make sure that they do not pass TB on to other people. But TB education is also necessary for the general public. The public needs to know basic information about TB for a number of reasons including reducing the stigma still associated with TB.

 TB drug treatment for the prevention of TB, also known as chemoprophylaxis, can reduce the risk of a first episode of active TB occurring in people with [latent TB](https://www.tbfacts.org/latent-tb/).  The treatment of latent TB is being used as a tool to try and eliminate [TB in the United States](https://www.tbfacts.org/tb-united-states/).

Isoniazid is one of the drugs used to prevent latent TB from progressing to active TB or [TB disease](https://www.tbfacts.org/tb/). Isoniazid is a cheap drug, but in a similar way to the use of the BCG vaccine, it is mainly used to protect individuals rather than to interrupt transmission between adults.

1. Describe four or more bacterial vaccine-preventable diseases that have the same modes of transmission

Answers

Pneumonia, Meningitis, Tuberculosis, pertussis and Diphtheria. All have the same mode of transmission and they are airborne bacteria

**Table 1.0 Causes, transmission, symptoms, prevention and control methods for common bacterial vaccine-preventable diseases.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Disease** | **Bacterial cause *(scientific name)*** | **Mode of transmission** | **Symptoms** | **Prevention and control methods** |
| Tuberculosis | *Mycobacterium tuberculosis* | Respiratory by coughing or sneezing | Chronic cough, weight loss, fever, decreased appetite | BCG vaccine, chemoprophylaxis, early diagnosis and treatment |
| Diphtheria | *Corynebacterium diphtheriae* and its toxin | Respiratory by coughing or sneezing | Sore throat, loss of appetite, and slight fever | Diphtheria vaccine, combined with two or four other vaccines against pertussis, tetanus, BCG, etc. |
| Pertussis | *Bordetella pertussis* | Respiratory by coughing or sneezing | Runny nose, watery eyes, sneezing, fever, and continuous cough, followed by vomiting | Pertussis vaccine, combined with two or four other vaccines against diphtheria, tetanus, BCG, etc. |
| Meningitis (infection of the brain or spinal cord) | *Neisseria meningitidis* | Respiratory by coughing or sneezing | Fever, headache, neck stiffness, coma | Meningococcal vaccine and treatment by antibiotics |
| *Streptococcus pneumoniae* |  | Treatment by antibiotics; a pneumococcal conjugate vaccine (PCV) |
| Pneumonia (infection of the lungs) | *Streptococcus pneumoniae* | Respiratory by coughing or sneezing | Cough, fast breathing/difficult breathing | Treatment by antibiotics; a pneumococcal conjugate vaccine (PCV) |
|  | *Haemophilus influenzae* | Respiratory by coughing or sneezing | Cough, fast breathing/difficult breathing | Treatment by antibiotics; Hib is part of the pentavalent vaccine |

1. What are the causes and methods for preventing bacterial meningitis?

**Answers**

Meningitis is an inflammation of the membranes (meninges) surrounding your brain and spinal cord.

**Bacterial meningitis**

Bacteria that enter the bloodstream and travel to the brain and spinal cord cause acute bacterial meningitis. But it can also occur when bacteria directly invade the meninges. This may be caused by an ear or sinus infection, a skull fracture, or, rarely, after some surgeries

Several strains of bacteria can cause acute bacterial meningitis, most commonly:

* **Streptococcus pneumonia (pneumococcus).** This bacterium is the most common cause of bacterial meningitis in infants, young children and adults in the United States. It more commonly causes pneumonia or ear or sinus infections. A vaccine can help prevent this infection.
* **Neisseria meningitides (meningococcus).** This bacterium is another leading cause of bacterial meningitis. These bacteria commonly cause an upper respiratory infection but can cause meningococcal meningitis when they enter the bloodstream. This is a highly contagious infection that affects mainly teenagers and young adults. It may cause local epidemics in college dormitories, boarding schools and military bases. A vaccine can help prevent infection.
* **Haemophilus influenzas (haemophilus).** Homophiles influenza type b (Hib) bacterium was once the leading cause of bacterial meningitis in children. But new Hib vaccines have greatly reduced the number of cases of this type of meningitis.
* **Listeria monocytogenes (listeria).** These bacteria can be found in unpasteurized cheeses, hot dogs and lunchmeats. Pregnant women, newborns, older adults and people with weakened immune systems are most susceptible. Listeria can cross the placental barrier, and infections in late pregnancy may be fatal to the baby.

1. Explain two characteristics that illustrate how the Anopheles larvae are different from other mosquito larvae. Using illustration is advised

**Differences between Anopheles larvae and others Mosquito larvae**

**Answers**

* It has no breathing siphon
* It rest parallel or horizontal to the water surface

|  |  |
| --- | --- |
| **Anopheles Larva** | **Culex Larva** |
| **https://onlinesciencenotes.com/wp-content/uploads/2018/02/culex-larva.jpg** | **https://onlinesciencenotes.com/wp-content/uploads/2018/02/anopheles-larva.png** |
| * They are surface feeder | * The are bottom feeder |
| * During intake of air, head lies horizonal, parallel to the water surface | * It hangs downward at the angle with water surface |

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